MarioGPT: Open-Ended Text2Level Generation through Large Language Models

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1 Prompt Details

Prompts are represented as combinations of specific features (e.g. pipes, enemies, blocks, elevation) alongside quantitative keywords:

- { *no, little, some, many, [0-1000]*} *pipes*
- { *no, little, some, many, [0-1000]* } *enemies*
- { *little, some, many, [0-1000]*} *blocks*
- { *low, high*} *elevation*

As an example, "*no pipes, many enemies, low elevation*" or "*many pipes, many enemies, many blocks*" are both possible prompts. The keywords "no", "little", "some", "many" are calculated from quantiles of the corresponding count (within a 50 column window), as detailed in Table 1. The "low" and "high" elevation are determined from the height of the highest unbreakable blocks in a segment of the level.

Table 1: Prompt Quantiles and corresponding counts within a 50 column window

tile	no	little	some	many
pipes	0	1	2	5
enemies	0	1	3	7
blocks	0	50	75	176

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14 ## 2   Dataset Details

Table 2: Unique Mario tiles

Tile Type	Symbol	Visualization
Empty	-	
Unbreakable	X	
Breakable	S	
Question Block	? / Q	
Coin	o	
Enemy	E	
Left pipe top	<	
Right pipe top	>	
Left pipe lower	[	
Right pipe lower	]	
Cannon Top	B	
Cannon Body	b	
Path	x	

15 ## 3   Generation from single seed

(a) "many pipes, many enemies, little blocks, low elevation"

(b) "little pipes, little enemies, many blocks, high elevation"

(c) "many pipes, some enemies"

(d) "no pipes, no enemies, many blocks"
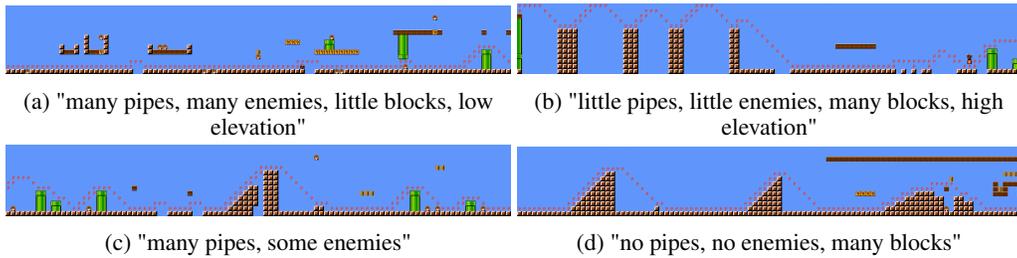
Figure 1: Prompt-conditioned generations from a single seed block. MarioGPT is able to create diverse levels solely based on a text prompt in natural language.

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